REMARKS

Claims 1, 3, 5-9 and 11 are presented for reconsideration in the light of the following remarks and authorities.

The Office Action states:

> 3. Claims 1, 3, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Akami et al. (JP 2003-223220A).
>
> Akami et al. disclosed an active vehicle suspension system with failsafe operation comprising: an actuator 3 with an armature and a stator, the stator having at least one coil with coil ends, power electronics connected to the coil ends to deliver power to the actuator through the coil ends, and a failsafe clamping circuit 49A comprising a solid-state device connected to the coil ends, separated from the power electronics, and powered by energy produced from the movement of the actuator that is directly conveyed to the clamping circuit from the coil ends, to passively damp the actuator during a failure of the power electronics by clamping the coil ends together through relay; wherein when the machine is operated as an alternator in the failsafe mode, wherein the movement of the actuator generates a back electromotive force as a result of the armature moving relative to the stator within the actuator see par. [0052]-[0054].

Pp. 2-3.

This ground of rejection is respectfully traversed.

"It is well settled that anticipation under 35 U.S.C. 102 requires the presence in a single reference of all of the elements of a claimed invention." *Ex parte Chopra*, 229 U.S.P.Q. 230, 231 (BPA&I 1985) and cases cited.

"Anticipation requires the presence in a single prior art disclosure of all elements of a claimed invention arranged as in the claim." *Connell v. Sears, Roebuck & Co.*, 220 U.S.P.Q. 193, 198 (Fed. Cir. 1983).

"This court has repeatedly stated that the defense of lack of novelty (i.e., 'anticipation') can only be established by a single prior art reference which discloses each and every element of the claimed invention." *Structural Rubber Prod. Co. v. Park Rubber Co.*, 223 U.S.P.Q. 1264, 1270 (Fed. Cir. 1984), citing five prior Federal Circuit decisions since 1983 including *Connell*.

In a later analogous case the Court of Appeals for the Federal Circuit again applied this rule in reversing a denial of a motion for judgment n.o.v. after a jury finding that claims were anticipated. *Jamesbury Corp. v. Litton Industrial Prod., Inc.*, 225 U.S.P.Q. 253 (Fed. Cir. 1985).

After quoting from *Connell*, "Anticipation requires the presence in a single prior art disclosure of all elements of a claimed invention arranged as in the claim," 225 U.S.P.Q. at 256, the court observed that the patentee accomplished a constant tight contact in a ball valve by a lip on the seal or ring which interferes with the placement of the ball. The lip protruded into the area where the ball will be placed and was thus deflected after the ball was assembled into the valve. Because of this constant pressure, the patented valve was described as providing a particularly good seal when regulating a low pressure stream. The court quoted with approval from a 1967 Court of Claims decision adopting the opinion of then Commissioner and later Judge Donald E. Lane:

> [T]he term "engaging the ball" recited in claims 7 and 8 means that the lip contacts the ball with sufficient force to provide a fluid tight seal. *** The Saunders flange or lip only sealingly engages the ball 1 on the upstream side when the fluid pressure forces the lip against the ball and never sealingly engages the ball on the downstream side because there is no fluid pressure there to force the lip against the ball. The Saunders sealing ring provides a compression type of seal which depends upon the ball pressing into the material of the ring. *** The seal of Saunders depends primarily on the contact between the ball and the body of the sealing ring, and the flange or lip sealingly contacts the ball on the upstream side when the fluid pressure increases. 225 U.S.P.Q. at 258.

Relying on *Jamesbury*, the ITC said, "Anticipation requires looking at a reference, and comparing the disclosure of the reference with the claims of the patent in suit. A claimed device is anticipated if a single prior art reference discloses all the elements of the claimed invention as arranged in the claim." *In re Certain Floppy Disk Drives and Components Thereof*, 227 U.S.P.Q. 982, 985 (U.S. ITC 1985).

> The pertinence of the specification to claim construction is reinforced by the manner in which a patent is issued. The Patent and Trademark Office ("PTO") determines the scope of claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction "in light of the specification as it would be interpreted by one of ordinary skill in the art." *In re Acad. Of Sci. Tech. Ctr.,* 367 F.3d 1359, 1364 (Fed. Cir. 2004). *Phillips v. AWH Corp.*, 76 U.S.P.Q. 1321, 1329 (Fed. Cir. 2005) (en banc).

The Examiner has not properly construed the claims. The claims positively recite "a failsafe clamping circuit comprising a solid-state device connected to the coil ends, separated

from power electronics, and powered by energy produced from movement of the actuator that is directly conveyed to the clamping circuit from the coil ends, to passively damp the actuator during the failure of the power electronics by clamping the coil ends together."

Paragraph 35 of the published application explains, "In case of a failure of the power electronics 54, or during startup and shutdown, these safety-related forces must still be generated. Since in these situations, the power electronics 54 cannot be relied upon to provide active clamping, a separate failsafe clamping circuit 77 is also connected to the coils of stator 16." By having a separate clamping circuit, the system of claim 1 can provide failsafe protection in the case where the power electronics themselves fail.

Paragraph 46 explains, "When external power is eventually removed from the system, power electronic 54 completely releases control of the coils, while the failsafe clamping circuit 100 continues to operate and clamp the coil ends whenever sufficient back EMF is generated."

Thus, the claim 1 requires that the failsafe clamping circuit comprising a solid-state device connected to the coil ends be separated from the power electronics. This limitation cannot be found in the Akami reference.

Our Information Disclosure Statement included a translation of the reference. While the translation is thought to be accurate, the Examiner is urged to have the translation verified by the official translator.

Paragraphs 52-55 of the Akami reference translation discloses that FIG. 7 and 8 illustrates a circuit 80A which can be powered from motion of the actuator to control FET's 542, 544 and 546 when a fault is detected to allow clamping of the W, V, and U phase coils of motor 3. It can be seen that FET's 542, 544 and 546 are part of the power electronics, as they are the output devices driven by PWM signal generator 45 to provide power to the W, V, and U phase coils to operate the motor. The embodiments of FIGS. 7 and 8, therefore uses the output devices of the power electronics as switch element to clamp motor coils under failsafe operation.

There are advantages in having the claimed failsafe clamping circuit separated from the power electronics as disclosed and claimed in this application. There is increased reliability of the failsafe function. The power electronics output devices are potential failure points in an active suspension system. They are subjected to high voltages and currents and dissipate large

amounts of power as heat. Small manufacturing defects, the effectiveness of heat removal from the devices, fatigue of components due to vibration, component aging, and other sources of defects can cause output devices to fail.

If an output device in the system of the Akami reference that uses solid-state devices for clamping fails, then that output device would not be available to act to clamp the leads of the actuator. That is, if an output device in Akami fails, the circuitry of the Akami reference would not be able to control the state of that output device any longer. Under this likely failure condition, the reference circuit would not be able to provide failsafe operation. If an output device in Akami fails, it may not be available to clamp one of the motor coil phases to provide failsafe damping. A failsafe system, in order to be operative as a failsafe system, should protect against the most likely failure modes at a minimum, if not most of all foreseeable failure modes. The reference fails to protect against what is probably the most likely point of failure in the power electronics. By having a clamp circuit separate from the power electronics as disclosed and claimed in this application, the failure in the power electronics does not cause failure of the failsafe system. The separate claimed clamp circuit is available to clamp the leads of the actuator if any or all of the output devices of the power electronics fail because the separate failsafe clamp circuit is not part of the power electronics. The solid state device (or devices) used as part of the failsafe clamp circuit require a power supply in order to operate. The solid state devices are energized upon failure by energy produced from movement of the actuator that is directly conveyed to the clamping circuit from the coil ends, to passively damp the actuator during the failure of the power electronics by clamping the coil ends together.

At least because the Akami reference fails to disclose a clamp circuit comprising a solid state switch separated from the power electronics or energized upon failure by energy produced from movement of the actuator that is directly conveyed to the clamping circuit from the coil ends to passively damp the actuator during the failure of the power electronic damping the coil ends, the Akami reference cannot anticipate claim 1. Since claims 3 and 6 are dependent on and include all the limitations of claim 1, the reference cannot anticipate claims 3 and 6. Accordingly, withdrawal of the rejection of claims 1, 3 and 6 as anticipated by the reference is

respectfully requested. If this ground of rejection is repeated, the Examiner is respectfully requested to quote verbatim the language in the reference translation regarded as corresponding to each limitation in at least the last subparagraph of claim 1.

The Office Action states:

> 5. Claims 1, 3, 5-9, and 11 are rejected under 35 U.S.C. 1 03(a) as being unpatentable over Patil et al. in view of Murty (US 4,815,575).
>
> Re-claims 1, 3, and 6 Patil et al. disclosed an active vehicle suspension system with failsafe operation comprising: an actuator 100 with an armature and a stator, the stator having at least one coil with coil ends A, B, C, power electronics connected to the coil ends to deliver power to the actuator through the coil ends, and a failsafe clamping circuit 118, 120, 138 connected to the coil ends powered by energy produced from the movement of the actuator that is directly conveyed to the clamping circuit from the coil ends, to passively damp the actuator during a failure of the power electronics by clamping the coil ends together through relay 120; wherein when the machine 104 is operated as an alternator in the failsafe mode, electric currents are generated by the rotation of the armature via the screw threads 112 and the screw cage 106, and the generation of electric currents will definitely generate a back electromotive force which powers the clamping circuit through the coil assembly, see col. 4, lines 1-29.
>
> However Patil et al. failed to disclose multiple coils and the clamping circuit electrically connects coil ends together to change the passive damping characteristic of the actuator and failed to disclose the clamping circuit comprises a solid-state device.
>
> Murty teaches, as shown in fig. 2, the use of a multiple-phase coil assembly A,8,C, a MOSFET normally-open solid state switch 30, which is a silicon device, electrically connecting at least one coil end, see col. 3, lines 52-57.
>
> It would have been obvious to one of ordinary skill in the art to merely provide the suspension system of Patil et al. with the known multiple-phase coil assembly which is a MOSFET normally-open solid-state switch and the switch electrically connecting at least one coil end, as taught by Murty, in order to change the passive damping characteristic of the actuator.
>
> Re-claim 5 Patil et al. disclosed the clamping circuit comprising a rectifier 118 and a single unidirectional switch.
>
> Re-claims 7 and 8, Patil et al. failed to disclose the use of a supplemental circuit, which comprises a bipolar Royer oscillator capable of operating at an input voltage of approximately 0.5 volts, for boosting the back EMF.
>
> It would have been obvious to one of ordinary skill in the art to use a supplemental circuit to boost the voltage in order to enable the switch of the clamping circuit. As for the supplemental circuit comprises a bipolar Royer oscillator capable of operating at an input voltage of approximately 0.5 volts, it would have been obvious to one of ordinary skill in the art to use a bipolar Royer

oscillator as merely a design choice as a selection of specific well known elements to perform a specific function.

Re-claim 9 Patil et al. was silent to disclose wherein the clamping circuit comprises switch circuitry enabled during vehicle startup and shutdown.

It would have been obvious to one of ordinary skill in the art to enabling the clamping circuit during vehicle startup and shutdown in order to ensure the generation of a force during a failure of the suspension device so as to provide safety.

Re-claim 11 Patil et al. failed to disclose wherein the clamping circuit comprises switch circuitry pulsed to change the passive damping characteristic of the actuator.

Murty teaches, as shown in fig. 2, wherein the output of the microcomputer 35 is a pulse modulated switching voltage which is provided to a switch 30 (part of the clamping switch) and thus control resistor 23 and the damping of the suspension, see col. 3, lines 52-57.

It would have been obvious to one of ordinary skill in the art to merely provide the suspension system of Patil et al. with the known use of the output of the microcomputer, a pulse modulated switching voltage, which is provided to a switch (part of the clamping switch) and thus control resistor and the damping of the suspension, as taught by Murty, in order to change the passive damping characteristic of the actuator so as to adjust the damping.

Pp. 3-6.

This ground of rejection is respectfully traversed.

In KSR Int'l Co. v. Teleflex Inc., 82 U.S.P.Q. 2d 1385, 1396 (U.S. 2007), after stating the steps "in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent in issue", the Court said, "To facilitate review this analysis should be made explicit." See *In re Kahn,* 441 F.3d 977, 988 (CAFed. 2006) ("[R]rejections on obvious grounds cannot be sustained by mere conclusory statements, instead there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness")".

"A fact finder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning. See *Graham*, 383 U.S., at 36 (warning against a "temptation to read into the prior art the teachings of the invention in issue" and instructing courts to "'guard against slipping into the use of hindsight'"(quoting *Monroe*

Auto Equipment Co. v. Heckethorn Mfg. & Supply Co., 332 F. 2d 406, 412 [141 USPQ 549] (CA6 1964))). *Id.* 1397.

In *Ex parte Aylward,* (BPA&I, Appeal No. 2007-2368 December 4, 2007) the Board said in reversing a final rejection,

> "Both anticipation under §102 and obviousness under §103 are two-step inquiries. The first step in both analyses is a proper construction of the claims ... The second step in the analysis requires a comparison of the properly constructed claims to the prior art". Medichem, S.A. v. Rolabo, SL., 353 F. 3d 928, 933 (Fed. Cir. 2003) (internal citations omitted):
>
> A. CLAIM CONSTRUCTION
>
> "The Patent and Trademark Office (PTO) must consider all claim limitations when determining patentability of an invention over the prior art." *In re Lowry* 32 F. 3d 1579, 1582 (Fed. Cir. 1994) (citing *In re Gulack*, 703 F. 2d. 1381, 1385 (Fed. Cir. 1983). Slip Op. Pp. 7-8.
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> * * *
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> "In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness." *In re Rijckaert,* 9 F.3d 1531, 1532 (Fed. Cir. 1993) (citing *in re Oetiker,* 977 F.2d 1443, 1445 (Fed. Cir. 1992)). "A *prima facie* case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art." *In re Bell,* 991 F.2d 781,783 (Fed. Cir. 1993) (quoting *In re Rinehart,* 531 F. 2d 1048, 1051 (CCPA 1976)).

In *Ex parte Hamilton* (BPA&I Appeal No. 2007-3091, March 11, 2008) in reversing a final rejection the Board said:

> The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. See *In re Kahn,* 441 F.3d 977, 987-88 (Fed. Cir. 2006), *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991), and *In re Keller*, 642 F.2d 413, 425 (CCPA 1981).
>
> The Examiner can satisfy this burden by showing some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *KSR Int'l. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007) (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). Slip Op. Pp. 5-6.

The Patil primary reference does not disclose a failsafe clamping circuit powered by energy produced from movement of the actuator. The primary reference only discloses current

generated by motion of the actuator to damp the actuator. What current generated by movement of the actuator in the primary reference is NOT used to do is to power a separate clamp circuit. The Patil reference fails to disclose where the power comes from to power the clamp circuit disclosed therein. Furthermore, since the primary reference discloses nominally closed contacts of the relay(s) 6 under failure condition, there is no requirement for electrical power to hold the relay closed under failure conditions. The Examiner relies on the following portion of the primary reference for support.

> The switch means preferably comprise normally open contacts of one or more electrically operated relays such that the failsafe damping is initiated by releasing the relays either under circuit control in the event of a sensed fault condition or as the natural result of a vehicle power failure.
>
> It is thus a feature of the present invention to provide a controlled damping suspension system for a motor vehicle which defines a failsafe damping rate for the suspension in the event of failure within the system; to provide a controlled damping failsafe suspension system for a motor vehicle wherein sprung and unsprung masses are interconnected via a permanent magnet rotary electric machine which rotates in alternate rotary directions as the masses move relative to one another with the machine being connected to a defined load in the event of failure within the system to operate as an alternator and thereby define a failsafe damping rate for the suspension; and, to provide a controlled damping failsafe suspension system for a motor vehicle wherein sprung and unsprung masses are interconnected via a permanent magnet rotary electric machine which rotates in alternate rotary directions as the masses move relative to one another with the machine being connected via normally closed contacts of at least one relay to connect the machine to a defined load in the event of failure within the system to operate as an alternator and thereby define a failsafe damping rate for the suspension.
>
> Col. 4, ll. 1-29.

Furthermore, the primary reference discloses mechanical relays, not solid-state switches. We have shown in prior responses the advantage of using a solid-state device instead of a mechanical relay.

The primary reference discloses a power supply providing power to the energizing coil of the relay to cause it to open when the system is functioning normally, not under failure conditions.

The Murty secondary reference does not overcome the shortcomings of the primary reference. The secondary reference discloses use of a solid-state device (normally open) as a variable resistance. The secondary reference discloses circuitry for controlling the solid-state device so the solid-state device receives power from a power supply. The secondary reference does not disclose circuitry powered from movement of the actuator.

If the normally open solid-state device 30 of the secondary reference is used to provide clamping under a failure condition, it requires power to operate the circuitry that drives 30, as shown in FIG. 2 of the secondary reference. The secondary reference shows the presence of a 5V supply, but fails to disclose the source of the 5V. The secondary reference is silent as to where power originates that is used to power the circuitry in FIG. 2 used to drive MOSFET 30. The rejected claims call for this power coming from motion of the actuator which neither the primary reference nor the secondary reference disclosed. It is therefore impossible to combine the references to meet the limitations of the claims rejected on them.

"Moreover, we observe that even if these references were combined in the manner proposed by the examiner, that which is set forth in appellant's claims . . . would not result." *Ex parte Bogar*, slip op. p.7 (BPA&I Appeal No. 87-2462, October 27, 1989). "Even if we were to agree with the examiner that it would have been obvious to combine the reference teachings in the manner proposed, the resulting package still would not comprise zipper closure material that terminates short of the end of the one edge of the product containing area, as now claimed." *Ex parte Schwarz*, slip op. p.5 (BPA&I Appeal No. 92-2629 October 28, 1992). "Although we find nothing before us indicating why it would be desired to combine the references in the manner urged by the examiner, it is clear to us that such a modification by itself would not result in that which is set forth in the claims." *Ex Parte Kusko*, 215 U.S.P.Q. 972, 974 (BPA&I 1981).

That it is impossible to combine the primary and secondary references to meet the limitations of the claims rejected on them, is reason enough for withdrawing the rejection of these claims on them. If this ground of rejection is repeated, the Examiner is respectfully requested to quote verbatim the language in the references regarded as corresponding to each limitation in at least claim 1.

In view of the foregoing authorities, remarks and the inability of the prior art, alone or in combination, to anticipate, suggest or make obvious the subject matter as a whole of the invention disclosed and claimed in this application, all the claims are submitted to be in a condition for allowance, and notice thereof is respectfully requested.

"The days of an adversarial relationship with patent applicants are over, Patent and Trademark Office Director David J. Kappos Nov. 19 told an audience of academics, practitioners, and a few of his employees. In his first few months in office, Kappos said that [he] has repeatedly instructed Examiners to help Applicants find patentable subject matter." 79 PTCJ 101 (November 27, 2009).

While it is submitted that the claims meet the conditions for patentability, if the Examiner has suggestions for placing the application in a condition for allowance, we are receptive to considering them.

Please apply any charges or credits to deposit account 06-1050, order no. 02103-0381001.

Respectfully submitted,
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